

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 Claim 1 (currently amended): A detector assembly for quantifying
2 concentration of positron emitters in fluids within a microfluidic assembly,
3 comprising:
4 a base;
5 a window formed in the base;
6 a microfluidic channel disposed in the base for allowing liquids to flow
7 through the base;
8 a solid-state charged particle detector integral with said ~~supported by the~~
9 base wherein a first electrode of said solid-state charge charged particle detector is
10 disposed on a first side of said base and a second electrode of said solid-state
11 charge charged particle detector is disposed on a second side of said base in
12 spaced relation from said first side of said base; wherein the window is defined by
13 portions of said based disposed between said microfluidic channel and said first
14 and said second electrodes of said charged particle ~~detector and the microfluidic~~
15 ~~channel; and~~
16 the window has a thickness sufficient to allow transmission of beta particles
17 from positron emitters within the microfluidic channel to be detected by the solid-
18 state ~~charge~~ charged particle detector.

1 2. (currently amended): The detector assembly of Claim 1 wherein:
2 a portion of the base adjacent the window and supporting the solid state
3 ~~charge~~ charged particle detector has a thickness sufficient to substantially
4 attenuate the transmission of beta particles whereby a linear resolution of the
5 solid-state ~~charge~~ charged particle detector is increased.

1 3. (cancelled)

1 4. (cancelled)

1 5. (cancelled)

1 6. (cancelled)

1 7. (cancelled)

1 8. (cancelled)

1 9. (cancelled)

1 10. (Original): The detector assembly of Claim 1 wherein:
2 the base is at least in part made from a material selected from the group of
3 materials consisting of glass, polymer, silicon, or derivatives thereof.

1 11. (cancelled)

1 12. (cancelled)

1 13. (cancelled)

1 14. (currently amended): A detector assembly for quantifying a
2 concentration of positron emitters in a microfluidic assembly, the beta
3 detector assembly comprising:
4 a base;
5 a microfluidic channel disposed in the base enabling fluids to flow through
6 the base;
7 collimation means disposed in the base proximate the microfluidic channel
8 for collimating charged particles; and
9 a solid-state charged particle detector supported by the base and in
10 communication with the collimation means, wherein a first electrode of the solid-
11 state charged particle detector is disposed on a first side of the base and a second

12 electrode of the solid-state charged particle detector is disposed on a second side of
13 the base in spaced relation from the first side of the base.

1 15. (currently amended): The detector assembly of Claim 14 wherein:
2 a portion of the base adjacent the window and supporting the solid state
3 ~~charge~~ charged particle detector has a thickness sufficient to substantially
4 attenuate the transmission of beta particles whereby a linear resolution of the
5 solid-state ~~charge~~ charged particle detector is increased.

1 16. (cancelled)

1 17. (cancelled)

1 18. (cancelled)

1 19. (cancelled)

1 20. (cancelled)

1 21. (cancelled)

1 22. (original): The detector assembly of Claim 14 wherein:
2 the base is at least in part made from a material selected from the group of
3 materials consisting of glass, polymer, silicon, or derivatives thereof.

1 23. (cancelled)

1 24. (cancelled)

2 25. (currently amended): A detector assembly for quantifying a
3 concentration of positron emitters in a microfluidic assembly, the beta detector
4 assembly comprising:

5 a base constructed at least in part from a material selected from the group
6 of materials consisting of glass, polymer, silicon, or derivatives thereof;

7 a microfluidic channel disposed in the base enabling fluids to flow through
8 the base;

9 a solid-state charged particle detector supported by the base wherein a first
10 electrode of the solid-state charged particle detector is disposed on a first side of
11 the base and a second electrode of the solid-state charged particle detector is
12 disposed on a second side of the base in spaced relation from the first side of the
13 base; and

14 window means disposed in the base adjacent the microfluidic channel for
15 increasing the linear resolution of the solid-state ~~charge~~ charged particle detector.

1 26. (currently amended): The detector assembly of Claim 25 wherein:
2 a portion of the base adjacent the window means and supporting the solid
3 state ~~charge~~ charged particle detector has a thickness sufficient to substantially
4 attenuate the transmission of beta particles whereby a linear resolution of the
5 solid-state ~~charge~~ charged particle detector is increased.

1 27. (cancelled)

1 28. (cancelled)

1 29. (cancelled)

1 30. (cancelled)

1 31. (cancelled)

1 32. (cancelled)

1 33. (cancelled)

1 34. (cancelled)

1 35. (cancelled)

1 36. (cancelled)

1 37. (cancelled)